



**Amino acid sequence alignment in human IgG isotypes
and their variants.**

Human IgG Isotype	Amino Acid Position					
	228.....234	235	236	237.....330	331	
G1	Pro.....Leu	Leu	Gly	Gly.....Ala	Pro	
G2	Pro.....Val	Ala	Gly.....Ala	Pro	
G4	Ser.....Phe	Leu	Gly	Gly.....Ser	Ser	
G1 variant	Pro..... Val	Ala	Gly	Gly.....Ala	Ser	
G2 variant	Pro.....Val	Ala	Gly.....Ala	Ser	
G4 variant	ProPhe	Ala	Gly	Gly.....Ser	Ser	

ID number	Corresponding Row
SEQ ID NO:26	G1
SEQ ID NO:27	G2
SEQ ID NO:28	G4
SEQ ID NO:22	G1 variant
SEQ ID NO:18	G2 variant
SEQ ID NO:20	G4 variant

FIG 1



DNA and deduced amino acid sequences of HuEPO-L-vFc_{γ2}

DNA	SEQ NO. 17
Amino Acid Sequence	SEQ NO. 18
aag ctt ggc gcg gag atg ggg gtg cac gaa tgt cct gcc tgg ctg tgg ctt ctc ctg tcc 60	
HindIII M G V H E C P A W L W L L L S	
-27 -20	
ctg ctg tcg ctc cct ctg ggc ctc cca gtc ctg ggc gcc cca cca cgc ctc atc tgt gac 120	
L L S L P L G L P V L G A P P R L I C D	
-10 -1 1	
agc cga gtc ctg gag agg tac ctc ttg gag gcc aag gag gcc gag aat atc acg acg ggc 180	
S R V L E R Y L L E A K E A E N I T T G	
10 20	
tgt gct gaa cac tgc agc ttg aat gag aat atc act gtc cca gac acc aaa gtt aat ttc 240	
C A E H C S L N E N I T V P D T K V N F	
30 40	
tat gcc tgg aag agg atg gag gtc ggg cag cag gcc gta gaa gtc tgg cag ggc ctg gcc 300	
Y A W K R M E V G Q Q A V E V W Q G L A	
50 60	
ctg ctg tcg gaa gct gtc ctg cgg ggc cag gcc ctg ttg gtc aac tct tcc cag ccg tgg 360	
L L S E A V L R G Q A L L V N S S Q P W	
70 80	
gag ccc ctg cag ctg cat gtg gat aaa gcc gtc agt ggc ctt cgc agc ctc acc act ctg 420	
E P L Q L H V D K A V S G L R S L T T L	
90 100	
ctt cgg gct ctg gga gcc cag aag gaa gcc atc tcc cct cca gat gcg gcc tca gct gct 480	
L R A L G A Q K E A I S P P D A A S A A	
110 120	
cca ctc cga aca atc act gct gac act ttc cgc aaa ctc ttc cga gtc tac tcc aat ttc 540	
P L R T I T A D T F R K L F R V Y S N F	
130 140	
ctc cgg gga aag ctg aag ctg tac aca ggg gag gcc tgc agg aca ggg gac gga tcc ggt 600	
L R G K L K L Y T G E A C R T G D G S G	
150 160	
ggc ggt tcc ggt gga ggc gga agc ggc ggt gga gga tca gag cgc aaa tgt tgt gtc gag 660	
G G S G G G G S G G G G S E R K C C V E	
170 180	
tgc cca ccg tgc cca gca cca cct gtg gca gga ccg tca gtc ttc ctc ttc ccc cca aaa 720	
C P P C P A P P V A G P S V F L F P P K	
190 200	
ccc aag gac acc ctc atg atc tcc cgg acc cct gag gtc acg tgc gtg gtg gtg gac gtg 780	
P K D T L M I S R T P E V T C V V V D V	
210 220	
agc cac gaa gac ccc gag gtc cag ttc aac tgg tac gtg gac ggc gtg gag gtg cat aat 840	
S H E D P E V Q F N W Y V D G V E V H N	
230 240	
gcc aag aca aag cca cgg gag gag cag ttc aac agc acg ttc cgt gtg gtc agc gtc ctc 900	
A K T K P R E E Q F N S T F R V V S V L	
250 260	
acc gtt gtg cac cag gac tgg ctg aac ggc aag gag tac aag tgc aag gtc tcc aac aaa 960	
T V V H Q D W L N G K E Y K C K V S N K	
270 280	
ggc ctc cca gcc tcc atc gag aaa acc atc tcc aaa acc aaa ggg cag ccc cga gaa cca 1020	
G L P A S I E K T I S K T K G Q P R E P	
290 300	
cag gtg tac acc ctg ccc cca tcc cgg gag gag atg acc aag aac cag gtc agc ctg acc 1080	
Q V Y T L P P S R E E M T K N Q V S L T	
310 320	
tgc ctg gtc aaa ggc ttc tac ccc agc gac atc gcc gtg gag tgg gag agc aat ggg cag 1140	
C L V K G F Y P S D I A V E W E S N G Q	
330 340	
ccg gag aac aac tac aag acc aca cct ccc atg ctg gac tcc gac ggc tcc ttc ttc ctc 1200	
P E N N Y K T T P P M L D S D G S F F L	
350 360	
tac agc aag ctc acc gtg gac aag agc agg tgg cag cag ggg aac gtc ttc tca tgc tcc 1260	
Y S K L T V D K S R W Q Q G N V F S C S	
370 380	
gtg atg cat gag gct ctg cac aac cac tac acg cag aag agc ctc tcc ctg tct ccg ggt 1320	
V M H E A L H N H Y T Q K S L S L S P G	
390 400	
aaa tga gaa ttc 1332	
K EcoRI	
409	

FIG 2A



DNA and deduced amino acid sequences of HuEPO-L-vFc_{γ4}

DNA	SEQ NO. 19
Amino Acid Sequence	SEQ NO. 20
aag ctt ggc gcg gag atg ggg gtg cac gaa tgt cct gcc tgg ctg tgg ctt ctc ctg tcc 60	
HindIII M G V H E C P A W L W L L L S	
-27 -20	
ctg ctg tcg ctc cct ctg ggc ctc cca gtc ctg ggc gcc cca cca cgc ctc atc tgt gac 120	
L L S L P L G L P V L G A P P R L I C D	
-10 -1 1	
agc cga gtc ctg gag agg tac ctc ttg gag gcc aag gag gcc gag aat atc acg acg ggc 180	
S R V L E R Y L L E A K E A E N I T T G	
10 20	
tgt gct gaa cac tgc agc ttg aat gag aat atc act gtc cca gac acc aaa gtt aat ttc 240	
C A E H C S L N E N I T V P D T K V N F	
30 40	
tat gcc tgg aag agg atg gag gtc ggg cag cag gcc gta gaa gtc tgg cag ggc ctg gcc 300	
Y A W K R M E V G Q Q A V E V W Q G L A	
50 60	
ctg ctg tcg gaa gct gtc ctg cgg ggc cag gcc ctg ttg gtc aac tct tcc cag ccg tgg 360	
L L S E A V L R G Q A L L V N S S Q P W	
70 80	
gag ccc ctg cag ctg cat gtg gat aaa gcc gtc agt gcc ctt cgc agc ctc acc act ctg 420	
E P L Q L H V D K A V S G L R S L T T L	
90 100	
ctt cgg gct ctg gga gcc cag aag gaa gcc atc tcc cct cca gat gcg gcc tca gct gct 480	
L R A L G A Q K E A I S P P D A A S A A	
110 120	
cca ctc cga aca atc act gct gac act ttc cgc aaa ctc ttc cga gtc tac tcc aat ttc 540	
P L R T I T A D T F R K L F R V Y S N F	
130 140	
ctc cgg gga aag ctg aag ctg tac aca ggg gag gcc tgc agg aca ggg gac gga tcc ggt 600	
L R G K L K L Y T G E A C R T G D G S G	
150 160	
ggc ggt tcc ggt gga ggc gga agc ggc ggt gga gga tca gag tcc aaa tat ggt ccc cca 660	
G G S G G G G S G G G G S E S K Y G P P	
170 180	
tgc cca cca tgc cca gca cct gag ttc ggc ggc gga cca tca gtc ttc ctg ttc ccc cca 720	
C P C P A P E F A G G P S V F L F P P	
190 200	
aaa ccc aag gac act ctc atg atc tcc cgg acc cct gag gtc acg tgc gtg gtg gtg gac 780	
K P K D T L M I S R T P E V T C V V V D	
210 220	
gtg agc cag gaa gac ccc gag gtc cag ttc aac tgg tac gtg gat ggc gtg gag gtg cat 840	
V S Q E D P E V Q F N W Y V D G V E V H	
230 240	
aat gcc aag aca aag ccg cgg gag gag cag ttc aac agc acg tac cgt gtg gtc agc gtc 900	
N A K T K P R E E Q F N S T Y R V V S V	
250 260	
ctc acc gtc ctg cac cag gac tgg ctg aac ggc aag gag tac aag tgc aag gtc tcc aac 960	
L T V L H Q D W L N G K E Y K C K V S N	
270 280	
aaa ggc ctc ccg tcc tcc atc gag aaa acc atc tcc aaa gcc aaa ggg cag ccc cga gag 1020	
K G L P S S I E K T I S K A K G Q P R E	
290 300	
cca cag gtg tac acc ctg ccc cca tcc cag gag gag atg acc aag aac cag gtc agc ctg 1080	
P Q V Y T L P P S Q E M T K N Q V S L	
310 320	
acc tgc ctg gtc aaa ggc ttc tac ccc agc gac atc gcc gtg gag tgg gag agc aat ggg 1140	
T C L V K G F Y P S D I A V E W E S N G	
330 340	
cag ccg gag aac aac tac aag acc acg cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc 1200	
Q P E N N Y K T T P P V L D S D G S F F	
350 360	
ctc tac agc agg cta acc gtg gac aag agc agg tgg cag gag ggg aat gtc ttc tca tgc 1260	
L Y S R L T V D K S R W Q E G N V F S C	
370 380	
tcc gtg atg cat gag gct ctg cac aac cac tac aca cag aag agc ctc tcc ctg tct ctg 1320	
S V M H E A L H N H Y T Q K S L S L S L	
390 400	
ggg aaa tga gaa ttc 1335	
G K EcoRI	
410	

FIG 2B



DNA and deduced amino acid sequences of HuEPO-L-vFc₁

DNA	SEQ NO. 21
Amino Acid Sequence	SEQ NO. 22
aag ctt_ggc gcg gag atg ggg gtg cac gaa tgt cct gcc tgg ctg tgg ctt ctc ctg tcc 60	
HindIII M G V H E C P A W L W L L L S	
-27 -20	
ctg ctg tgc ctc cct ctg ggc ctc cca gtc ctg gcc gcc cca cca cgc ctc atc tgt gac 120	
L L S L P L G L P V L G A P P R L I C D	
-10 -1 1	
agc cga gtc ctg gag agg tac ctc ttg gag gcc aag gag gcc gag aat atc acg acg ggc 180	
S R V L E R Y L L E A K E A E N I T T G	
10 20	
tgt gct gaa cac tgc agc ttg aat gag aat atc act gtc cca gac acc aaa gtt aat ttc 240	
C A E H C S L N E N I T V P D T K V N F	
30 40	
tat gcc tgg aag agg atg gag gtc ggg cag cag gcc gta gaa gtc tgg cag ggc ctg gcc 300	
Y A W K R M E V G Q Q A V E V W Q G L A	
50 60	
ctg ctg tgc gaa gct gtc ctg cgg gcc cag gcc ctg ttg gtc aac tct tcc cag ccg tgg 360	
L L S E A V L R G Q A L L V N S S Q P W	
70 80	
gag ccc ctg cag ctg cat gtg gat aaa gcc gtc agt gcc ctt cgc agc ctc acc act ctg 420	
E P L Q L H V D K A V S G L R S L T T L	
90 100	
ctt cgg gct ctg gga gcc cag aag gaa gcc atc tcc cct cca gat gcg gcc tca gct gct 480	
L R A L G A Q K E A I S P P D A A S A A	
110 120	
cca ctc cga aca atc act gct gac act ttc cgc aaa ctc ttc cga gtc tac tcc aat ttc 540	
P L R T I T A D T F R K L F R V Y S N F	
130 140	
ctc cgg gga aag ctg aag ctg tac aca ggg gag gcc tgc agg aca ggg gac gga tcc ggt 600	
L R G K L K L Y T G E A C R T G D G S G	
150 160	
ggc ggt tcc ggt gga ggc gga agc ggc ggt gga gga tca gac aaa act cac aca tgc cca 660	
G G S G G G G S G G G G G S D K T H T C P	
170 180	
ccg tgc cca gca cct gaa <u>gtc</u> <u>gcg</u> ggg gga ccg tca gtc ttc ctc ttc ccc cca aaa ccc 720	
P C P A P E <u>V</u> <u>A</u> G G P S V F L F P P K P	
190 200	
aag gac acc ctc atg atc tcc cgg aca cct gag gtc aca tgc gtg gtg gtg gac gtg agc 780	
K D T L M I S R T P E V T C V V V D V S	
210 220	
cac gaa gac cct gag gtc aag ttc aac tgg tac gtg gac ggc gtg gag gtg cat aat gcc 840	
H E D P E V K F N W Y V D G V E V H N A	
230 240	
aag aca aag ccg cgg gag gag cag tac aac agc acg tac ccg gtg gtc agc gtc ctc acc 900	
K T K P R E E Q Y N S T Y R V V S V L T	
250 260	
gtc ctg cac cag gac tgg ctg aat ggc aag gag tac aag tgc aag gtc tcc aac aaa gcc 960	
V L H Q D W L N G K E Y K C K V S N K A	
270 280	
ctc cca gcc <u>tcc</u> atc gag aaa acc atc tcc aaa gcc aaa ggg cag ccc cga gaa cca cag 1020	
L P A <u>S</u> I E K T I S K A K G Q P R E P Q	
290 300	
gtg tac acc ctg ccc cca tcc cgg gat gag ctg acc aag aac cag gtc agc ctg acc tgc 1080	
V Y T L P P S R D E L T K N Q V S L T C	
310 320	
ctg gtc aaa ggc ttc tat ccc agc gac atc gcc gtg gag tgg gag agc aat ggg cag ccg 1140	
L V K G F Y P S D I A V E W E S N G Q P	
330 340	
gag aac aac tac aag acc acg cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc tac 1200	
E N N Y K T T P P V L D S D G S F F L Y	
350 360	
agc aag ctc acc gtg gac aag agc agg tgg cag cag ggg aac gtc ttc tca tgc tcc gtg 1260	
S K L T V D K S R W Q Q G N V F S C S V	
370 380	
atg cat gag gct ctg cac aac cac tac acg cag aag agc ctc tcc ctg tct ccg ggt aaa 1320	
M H E A L H N H Y T Q K S L S L S P G K	
390 400	
tga gaa ttc 1329	
EcoRI	

FIG 2C